ENERGY EFFICIENCY OF BUILDINGS AND THERMAL INSULATION

a different renewable energy source

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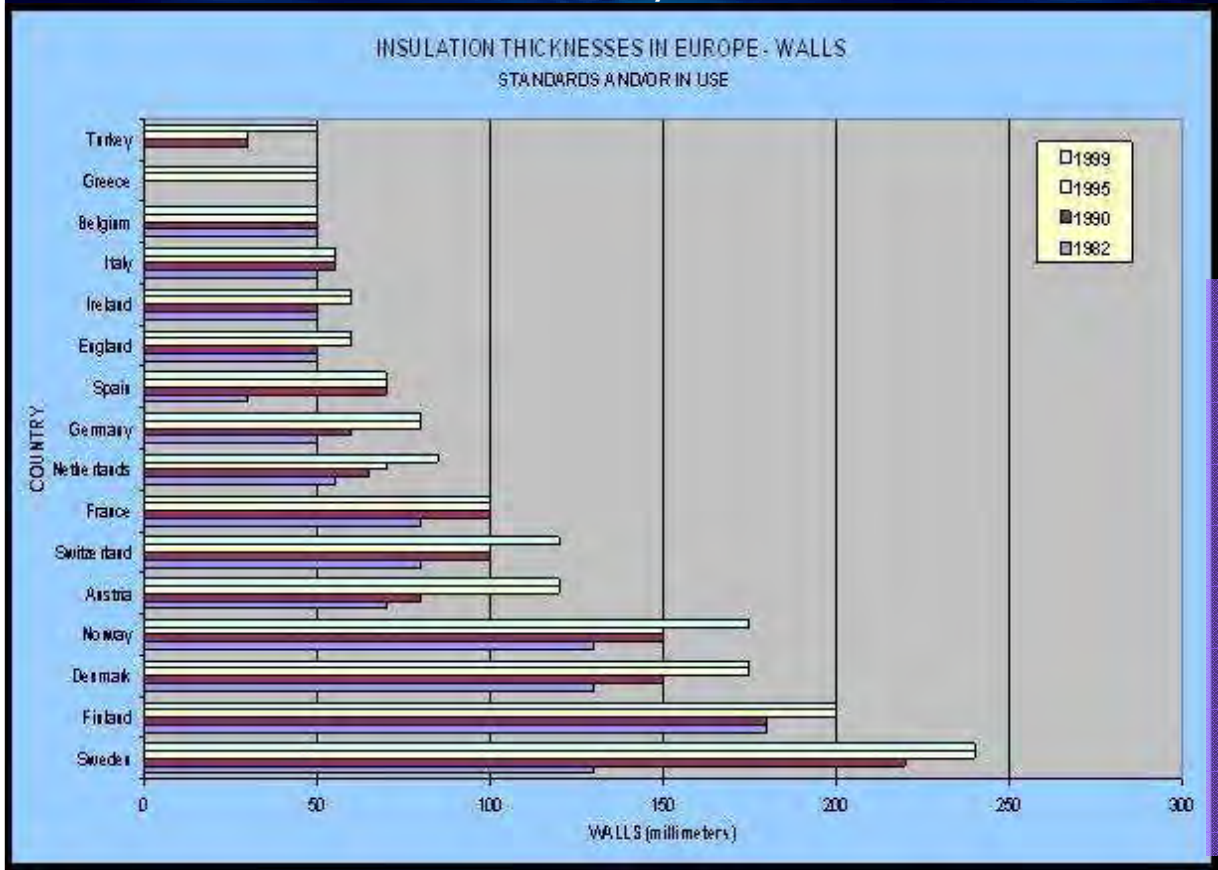
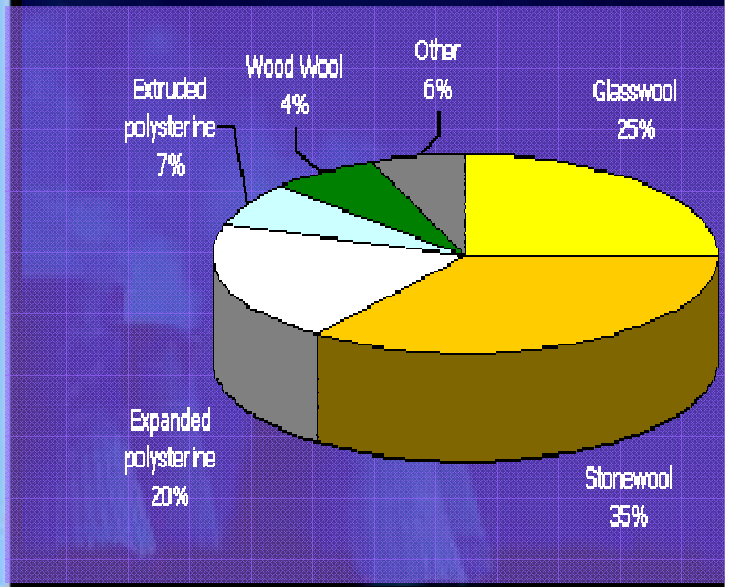
EPBD and thermal insulation

Thermal insulation is still the most economic and efficient way to design and construct an energy thrifty building.
Insulation materials are the key tool in that sense.

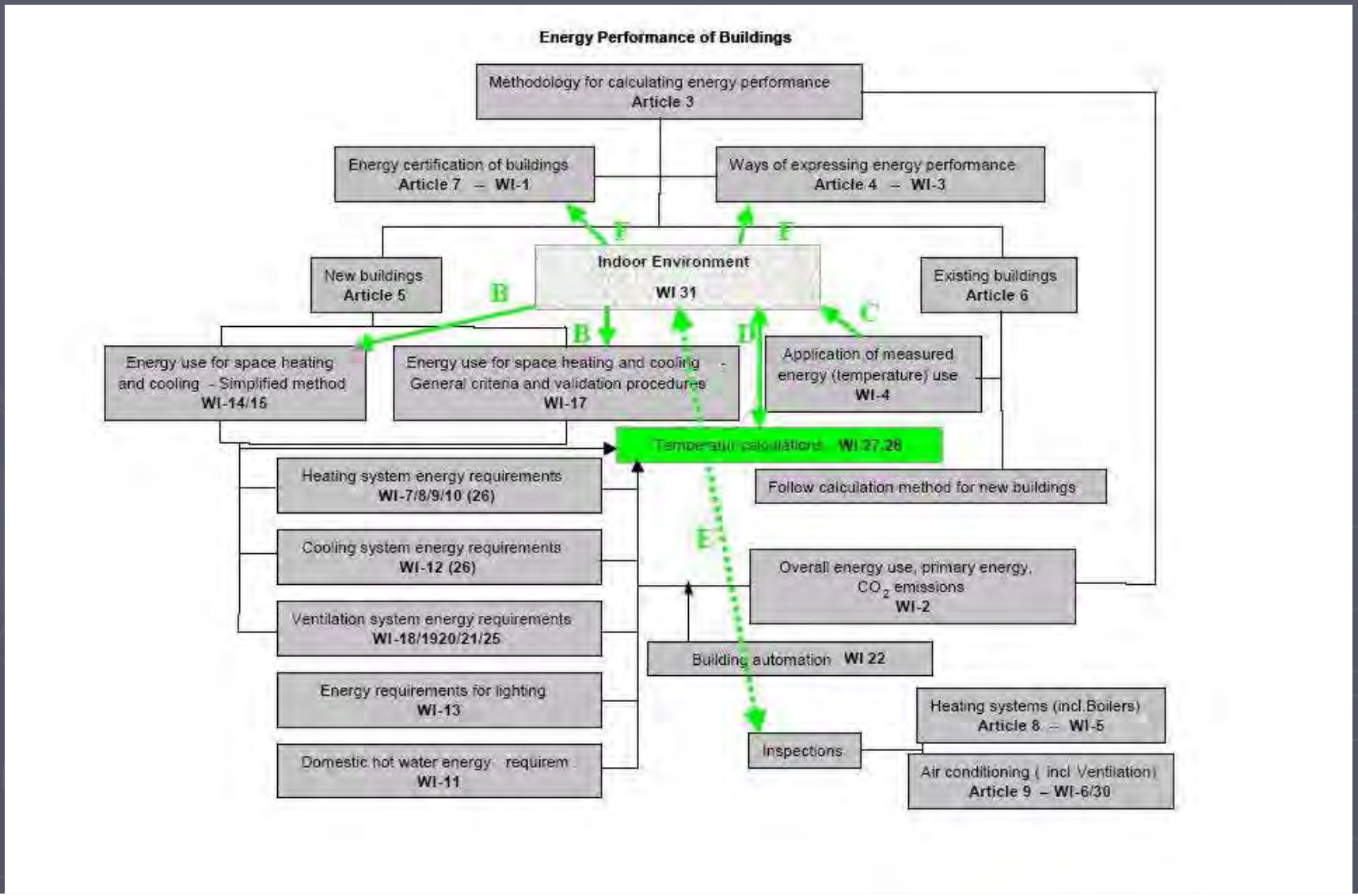




This is demonstrated by the increasing thicknesses used in buildings, which also reflects in the growing sales of the branch.

EPBD: a systemic, generic approach

A whole set of new CEN standards to implement it



EPBD: Certifying the energy performance of buildings

Who has to comply?

All new buildings bigger than 1.000 m^2

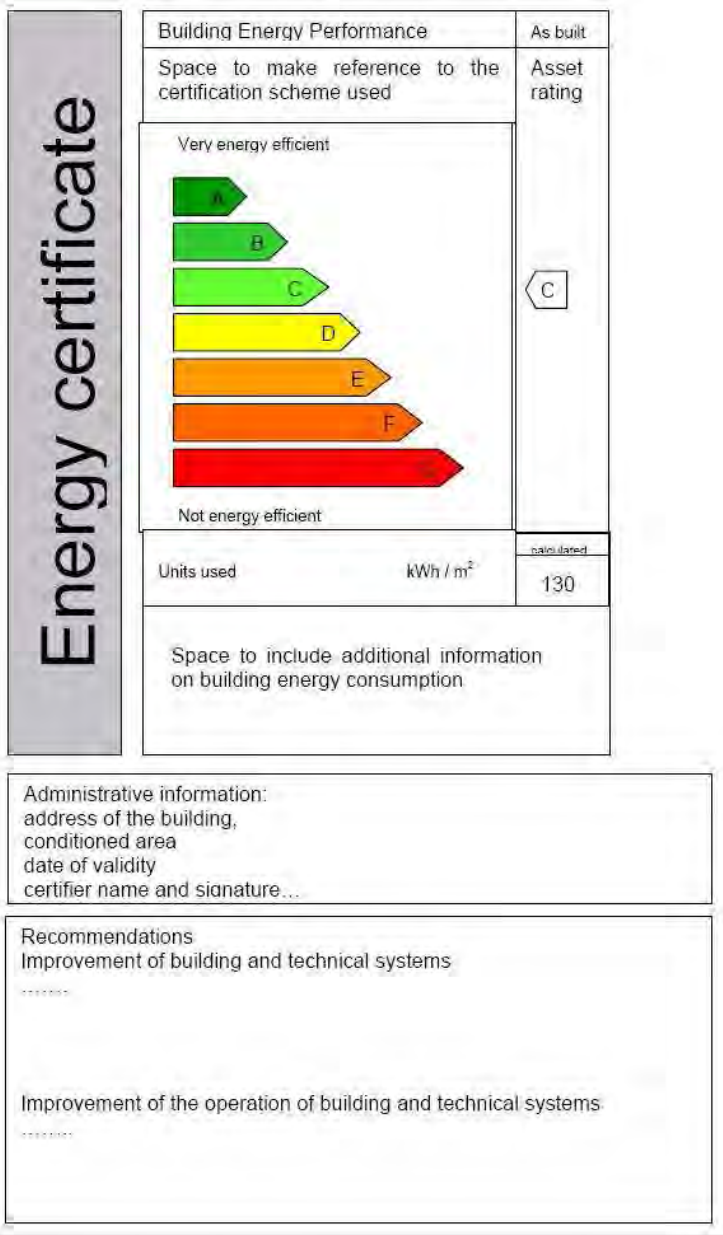
All public buildings

All buildings to be sold or rented

And how?

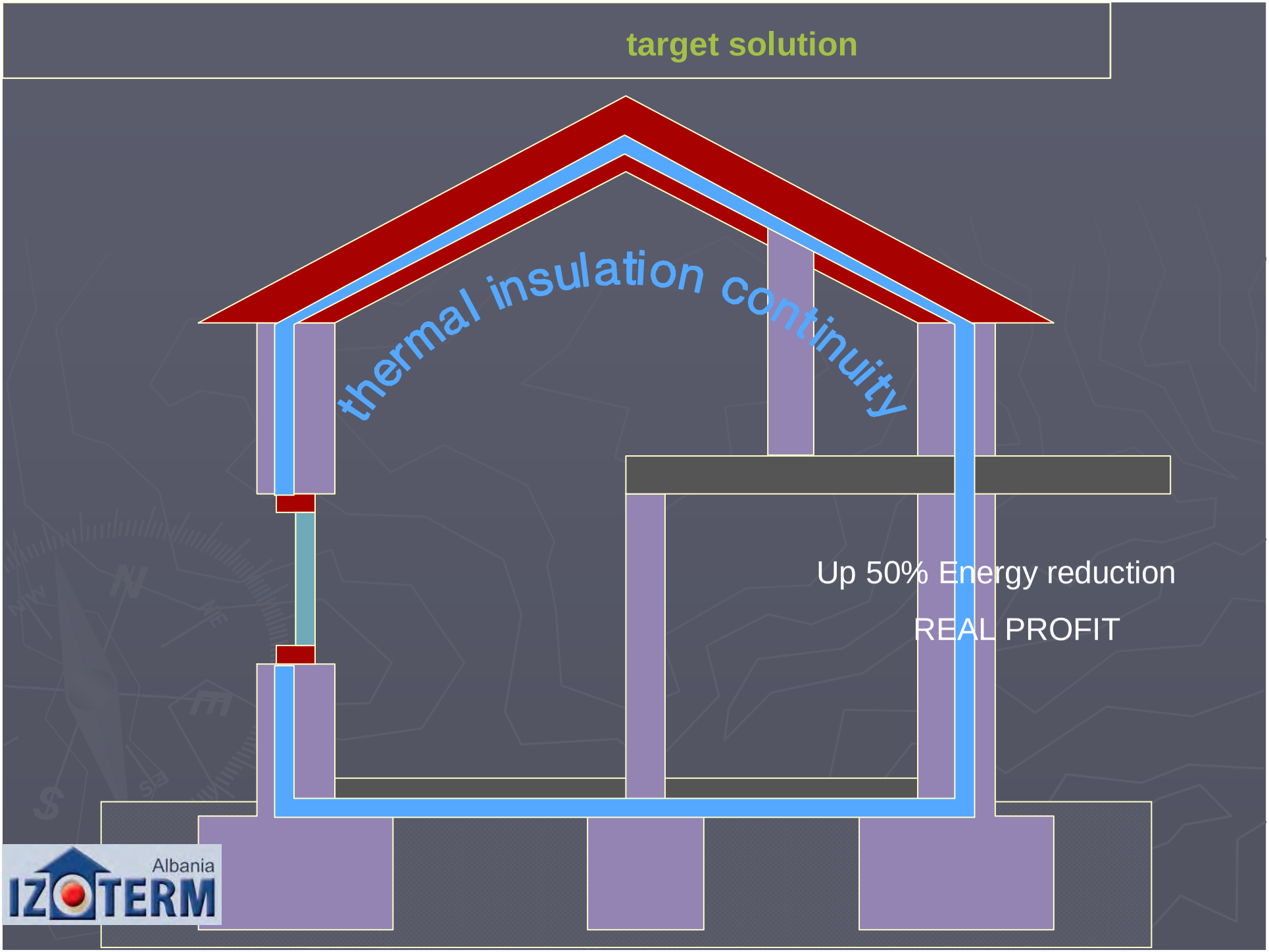
Either as designed
Or as built

Valid for 10 years



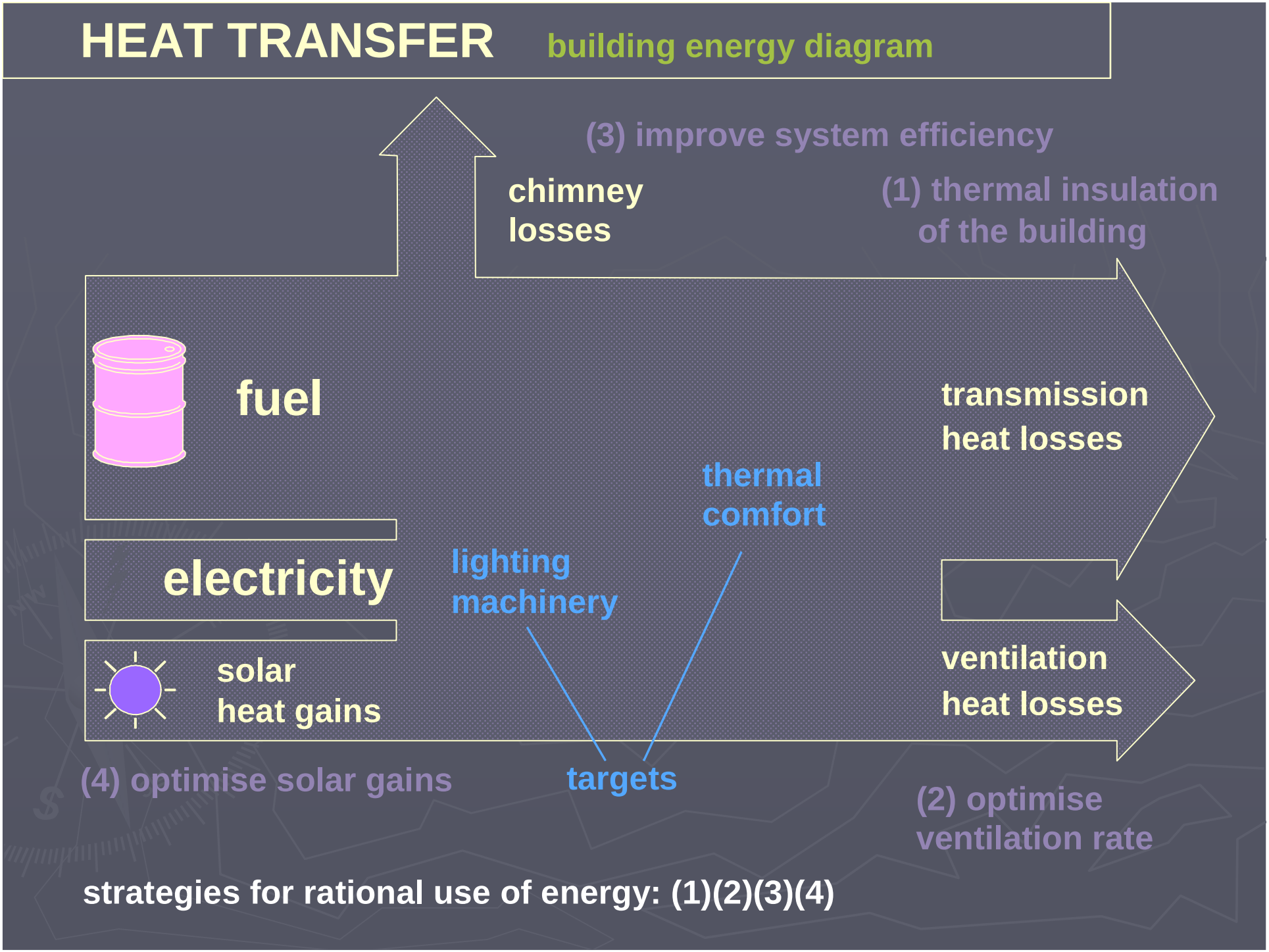
Klimatic zone of Albania

target solution



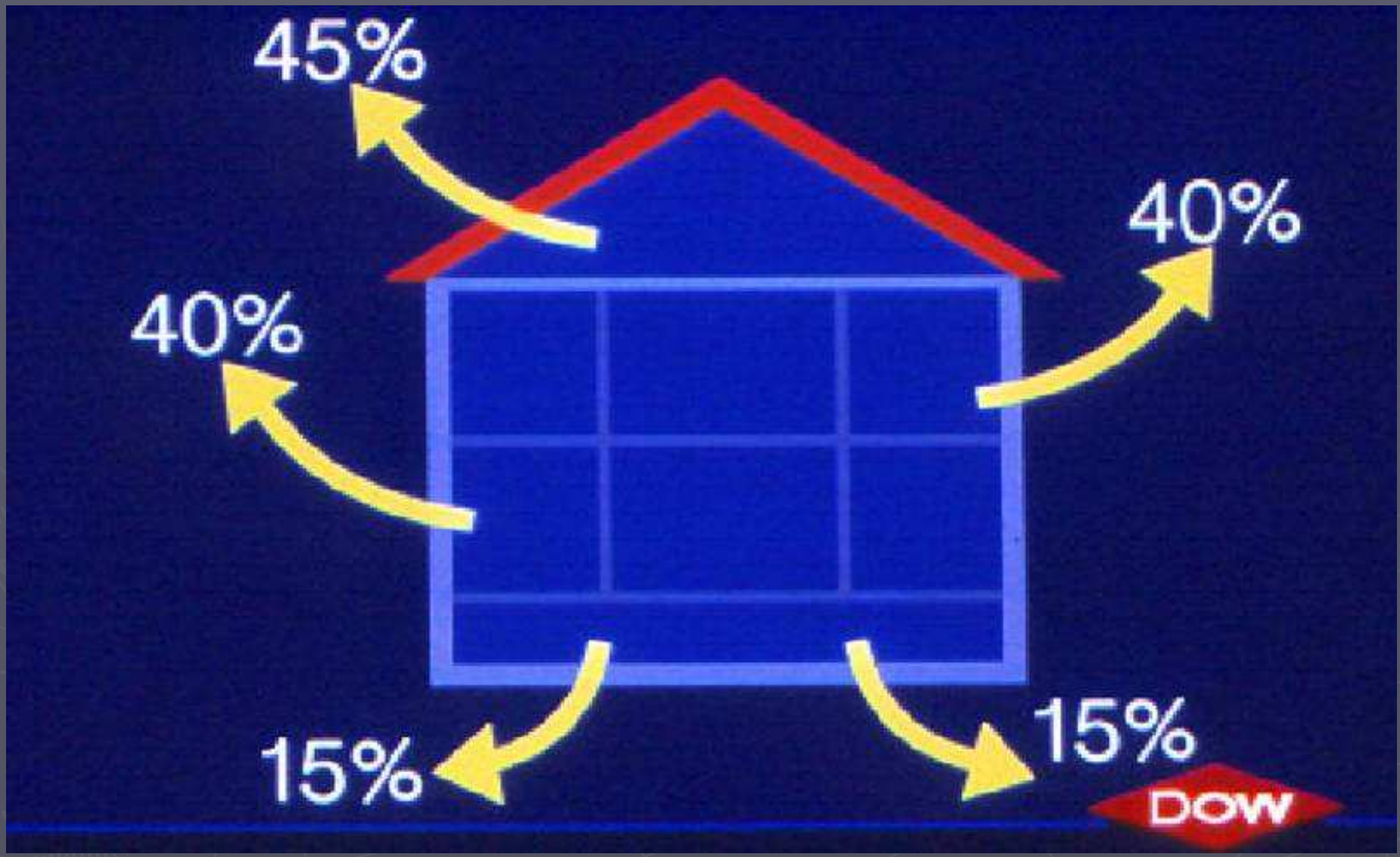
HEAT TRANSFER

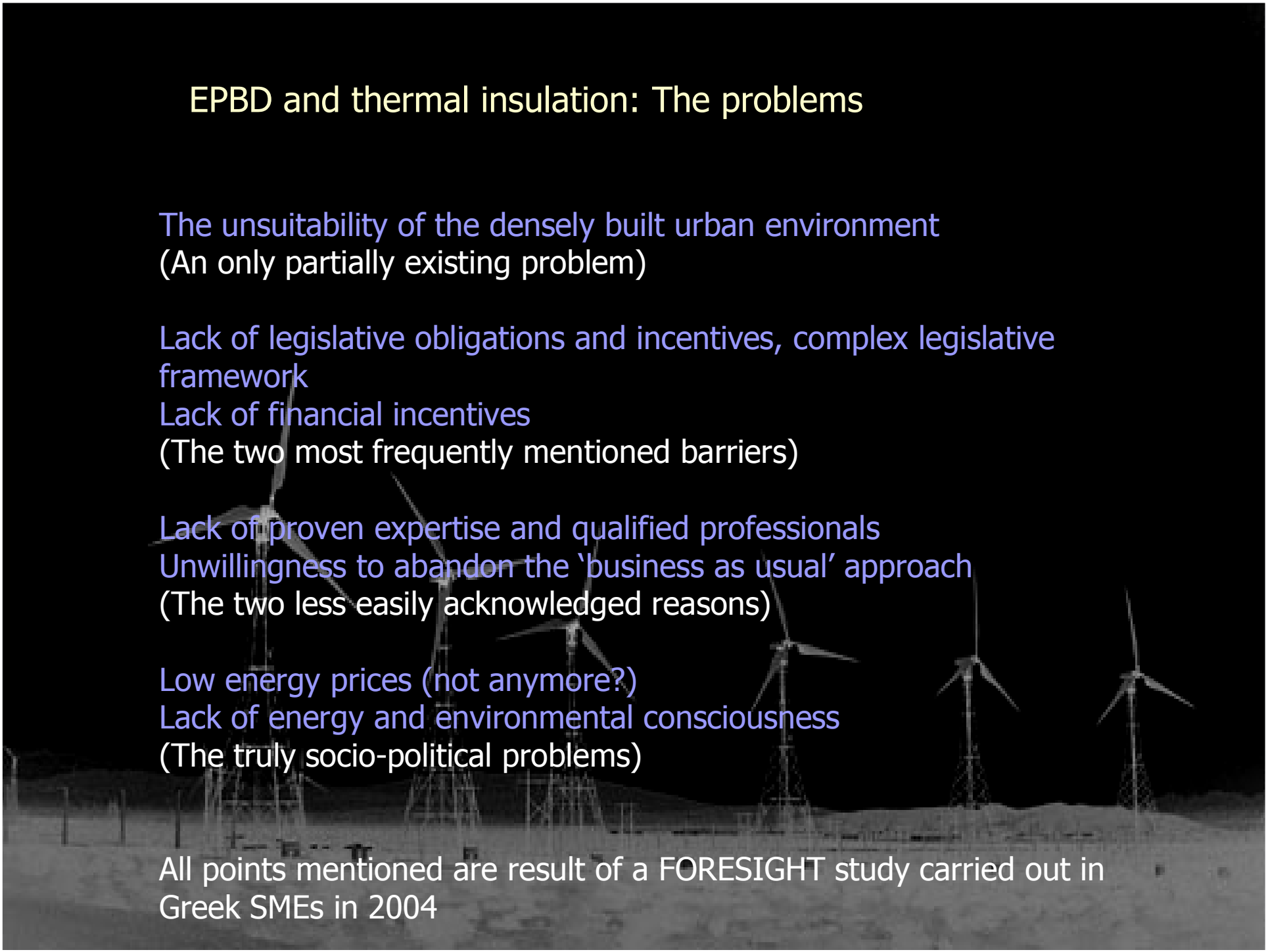
building energy diagram



strategies for rational use of energy: (1)(2)(3)(4)

Thermal Losses





EPBD and thermal insulation: The problems

The unsuitability of the densely built urban environment
(An only partially existing problem)

Lack of legislative obligations and incentives, complex legislative framework
Lack of financial incentives
(The two most frequently mentioned barriers)

Lack of proven expertise and qualified professionals
Unwillingness to abandon the 'business as usual' approach
(The two less easily acknowledged reasons)

Low energy prices (not anymore?)
Lack of energy and environmental consciousness
(The truly socio-political problems)

All points mentioned are result of a FORESIGHT study carried out in Greek SMEs in 2004

EPBD: A partial success is not enough

Up till now, a building with poor thermal comfort conditions, due to the lack of thermal insulation could be "improved", by means of higher energy consumption.

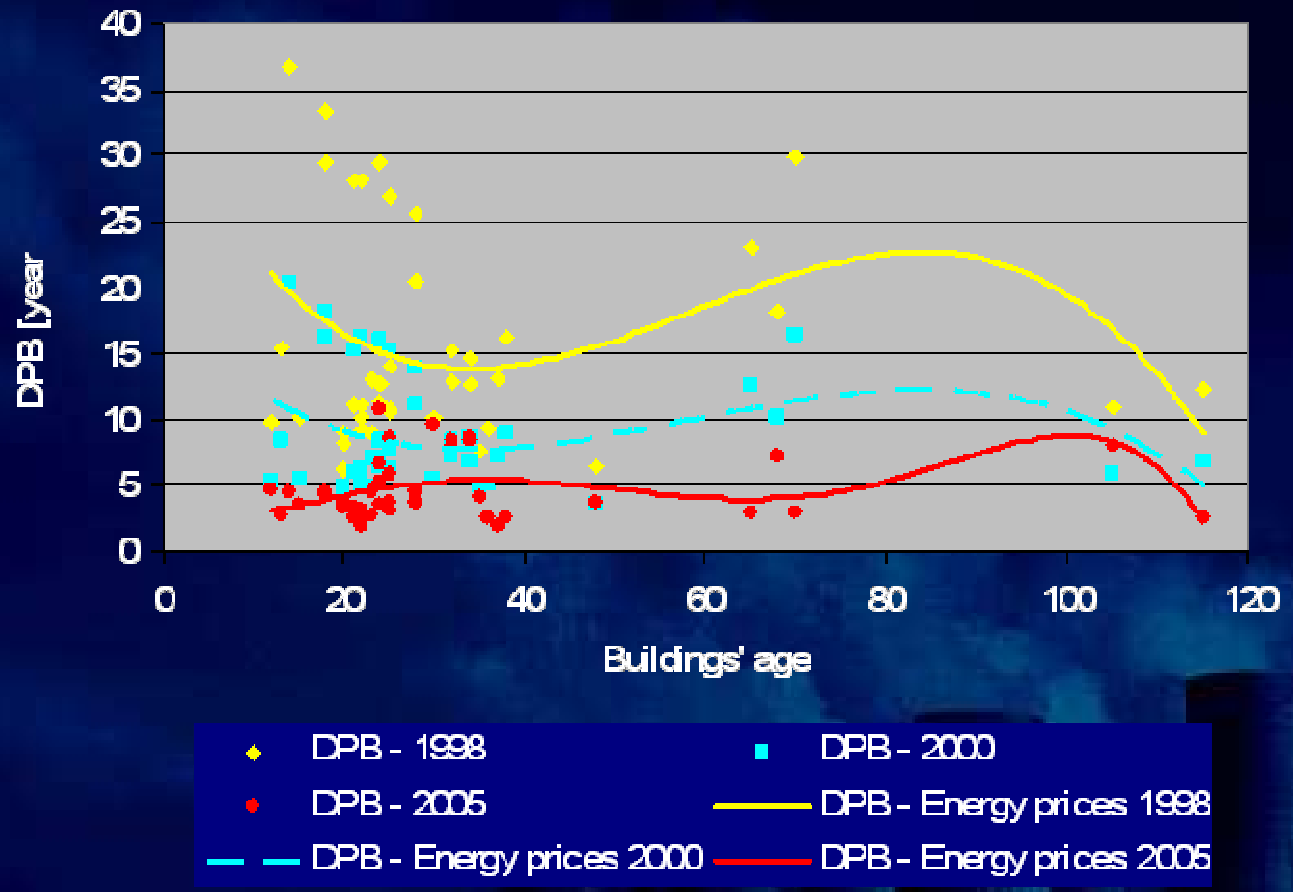
Up till now, a building with poor indoor air quality could be "improved", by means of increased ventilation and, therefore, higher energy consumption.

Up till now, a building with high energy consumption could be "improved", by reducing the heating or cooling provided, and hence reducing thermal comfort.

This is no longer possible.

Buildings have to be "honest" to their users, and this officially certified.

EPBD and thermal insulation: The economic aspect



The latest increase in energy prices is a good reminder of how short-sighted the policy of the last years has been.

20% of the Greek population spends more than 10% of its income for energy – tendency rising!

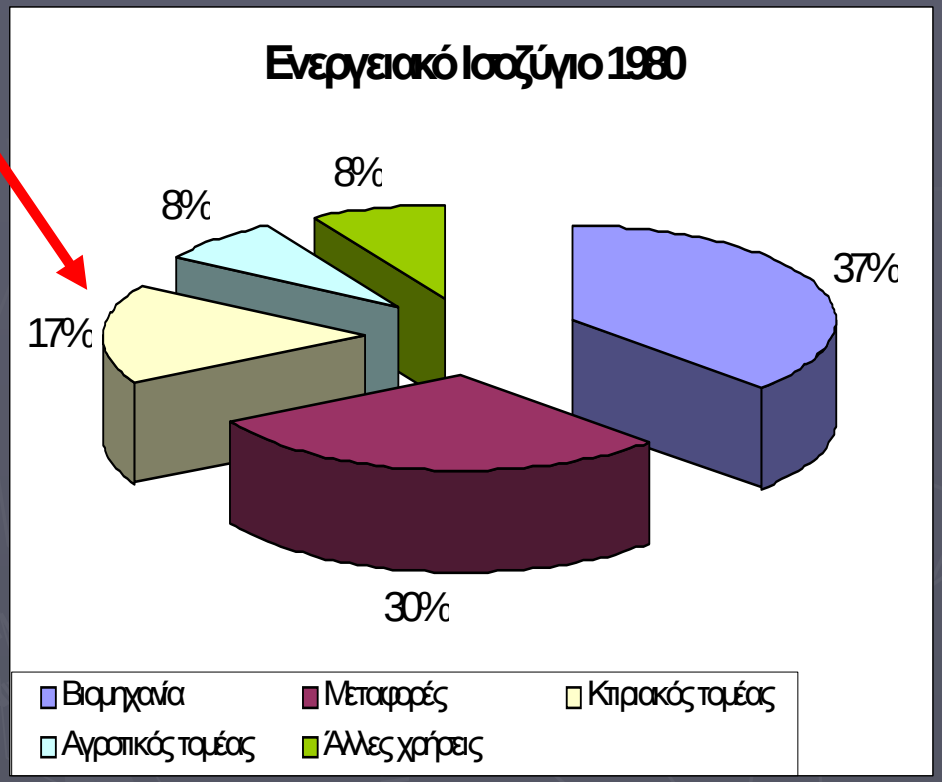
Had the measures been carried out, their reduced pay back period would now become apparent.

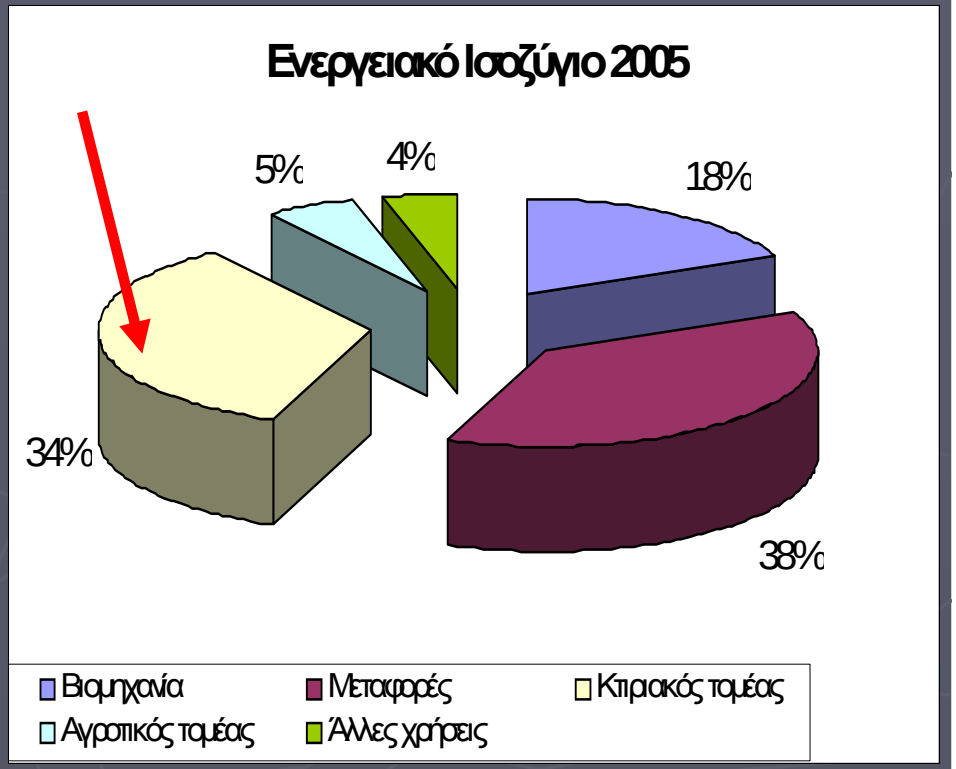
EPBD, thermal insulation and a rational, realistic policy

Average energy consumption is increasing rapidly, due to increased thermal comfort demands, black and white appliances and electronic equipment.

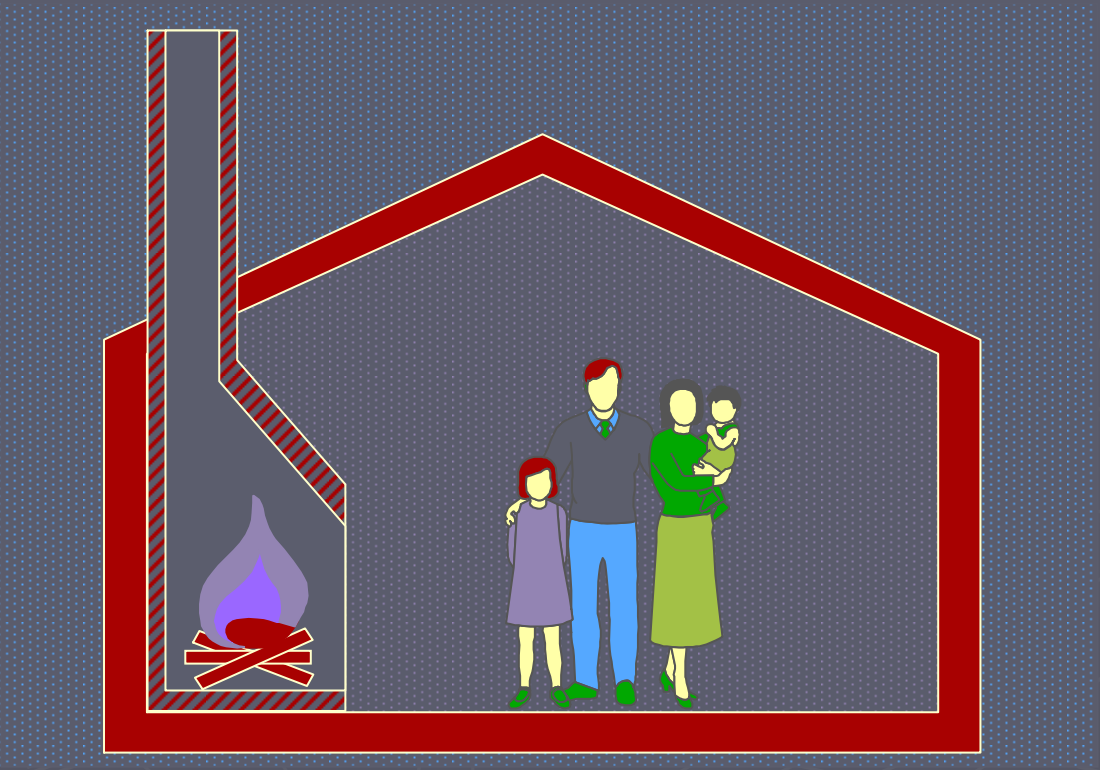
The most effective way to absorb this increase is to exploit the saving potential in space heating, A/C and DHW demand of new and older buildings.

ENERGY CONSUMPTION BY SECTORS -GREECE





ENERGY use for heating

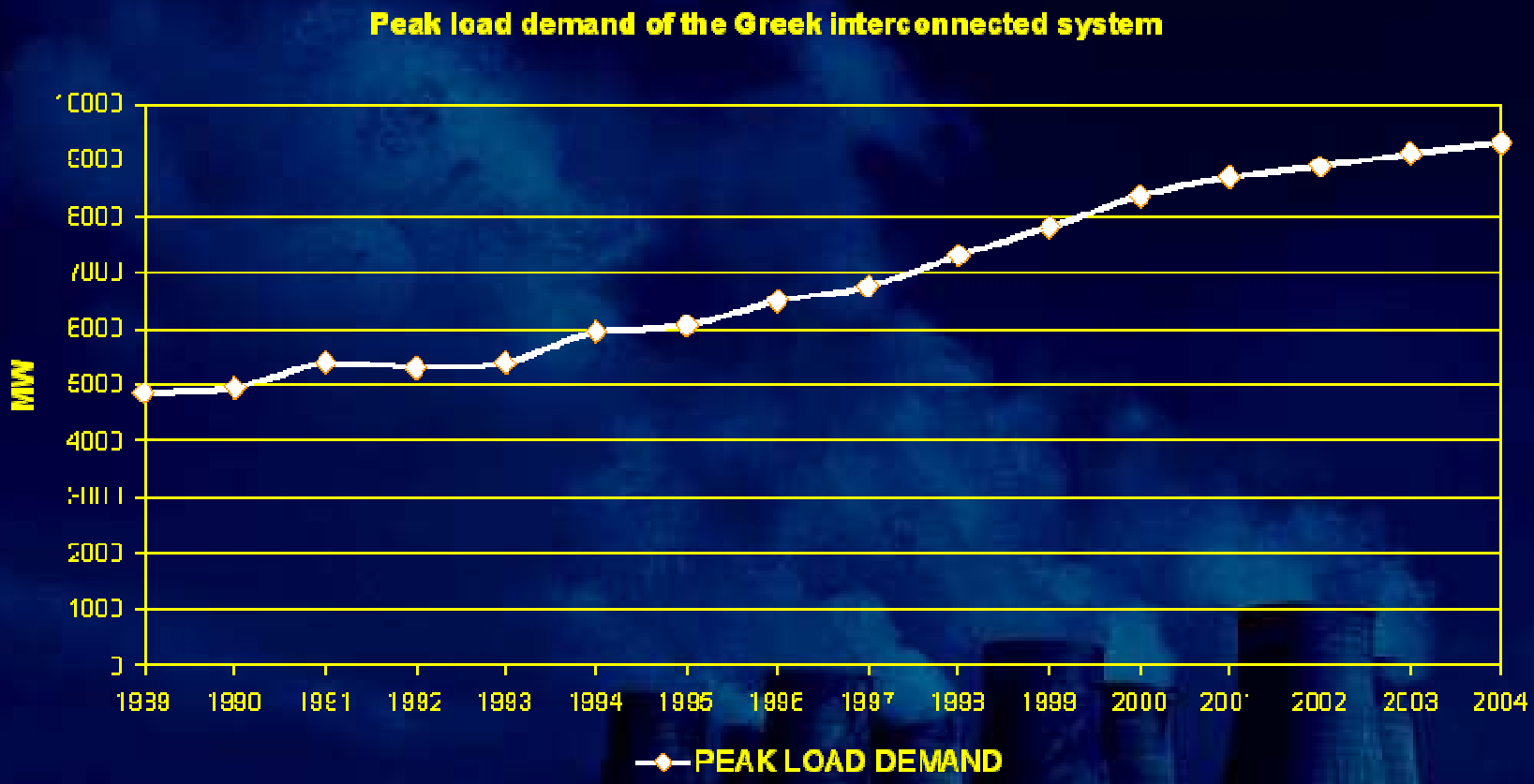


In Albania unlike other european countries, the majority of the heating is provided through electricity. As consequence the level of consumption from 1992 to 2005 has increased by 8% every year.

82% of the electricity is consumed by the residential sector and of this 40% goes to household's heating/cooling.

Forecast for 2015=?

EPBD and thermal insulation, not forgetting the exploding electricity demand

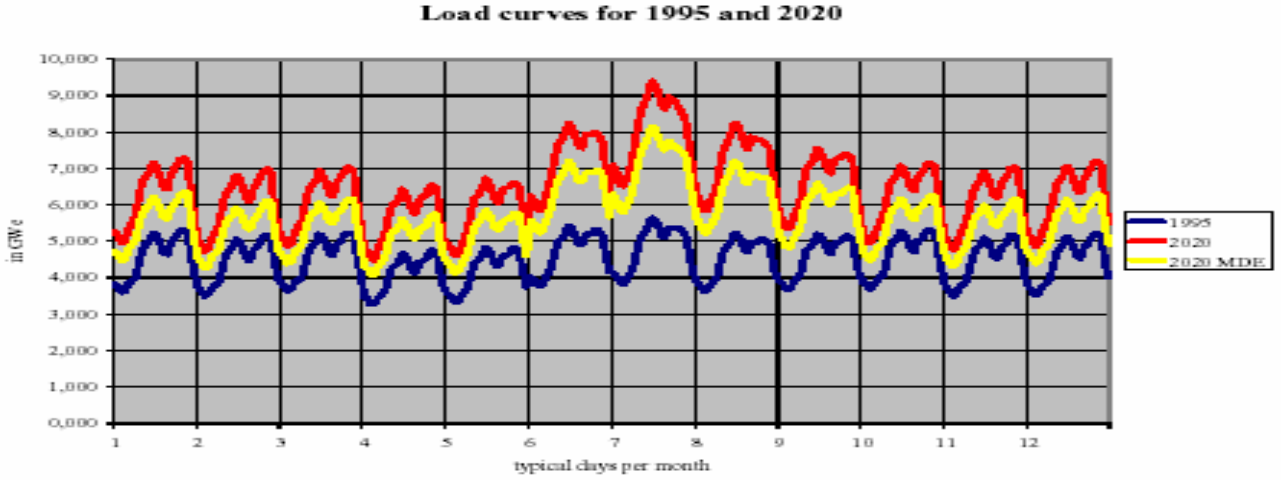


In July 2005 the absolute peak monitored was 9,620 MW.

At the same time the cost for providing the 'upper 600' MWs, that are used only for 20 days per year was estimated at something like 3,800 Euros / MW, compared to the 1,300 of the base load.

Energy consumption in buildings

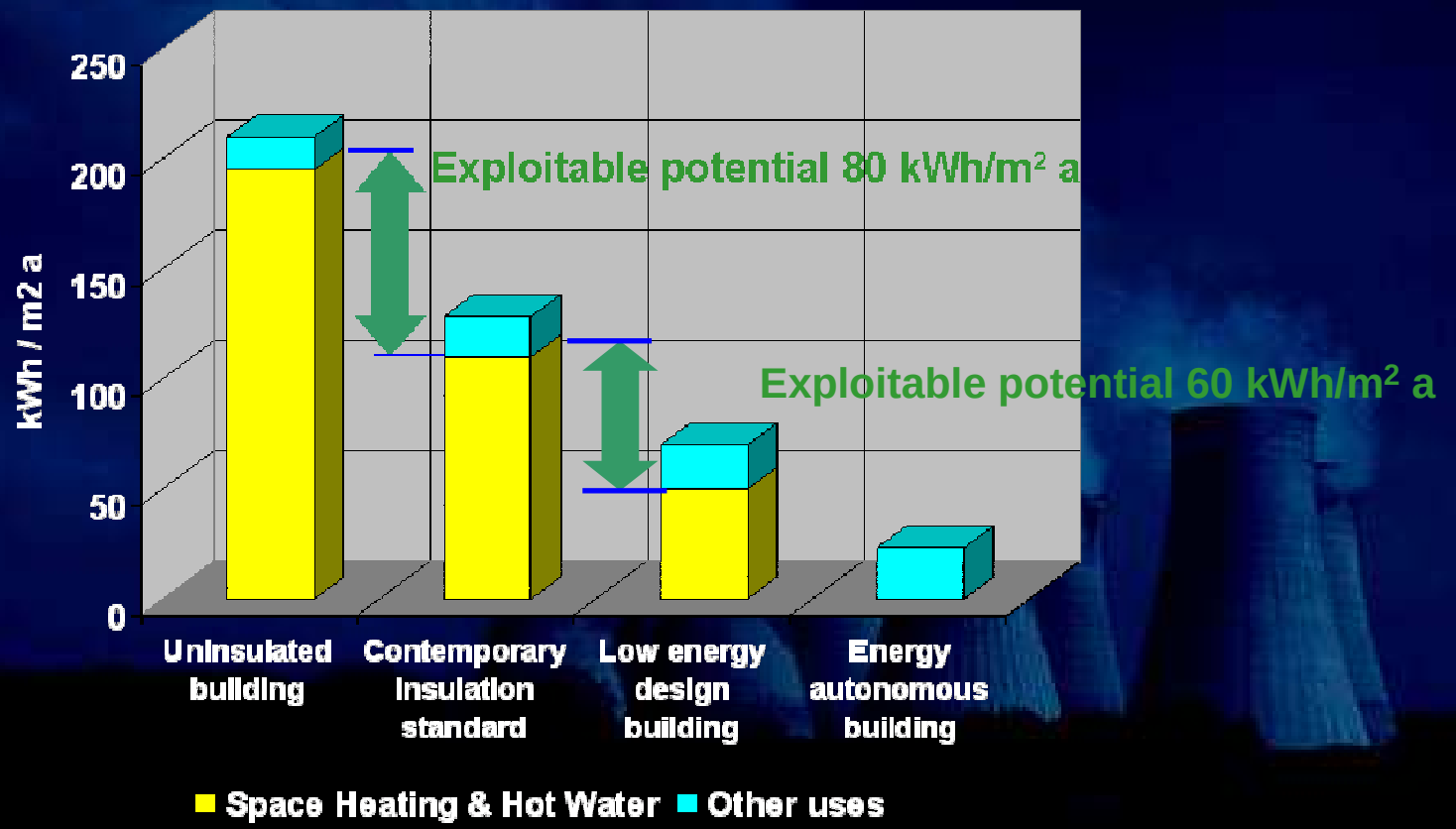
Unit: GWh	1990	1996	2010	2020
Austria	68,6	121,3	235,0	364,5
France	331,6	1782,1	5517,2	8975,5
Germany	155,9	672,4	1914,0	3197,3
Greece	208,8	1006,6	2281,3	3478,6
Italy	761,0	4494,1	5743,6	7033,9



40% of energy consumption in the EU is in buildings of all kinds.
25% of CO2 emissions result from buildings.
Electricity consumption is expected to double between 2000 and 2020

EPBD and thermal insulation: The potential

The greatest potential, also for existing buildings, lies within the reduction of thermal losses through the building's shell – and also in the improvement of heating systems.



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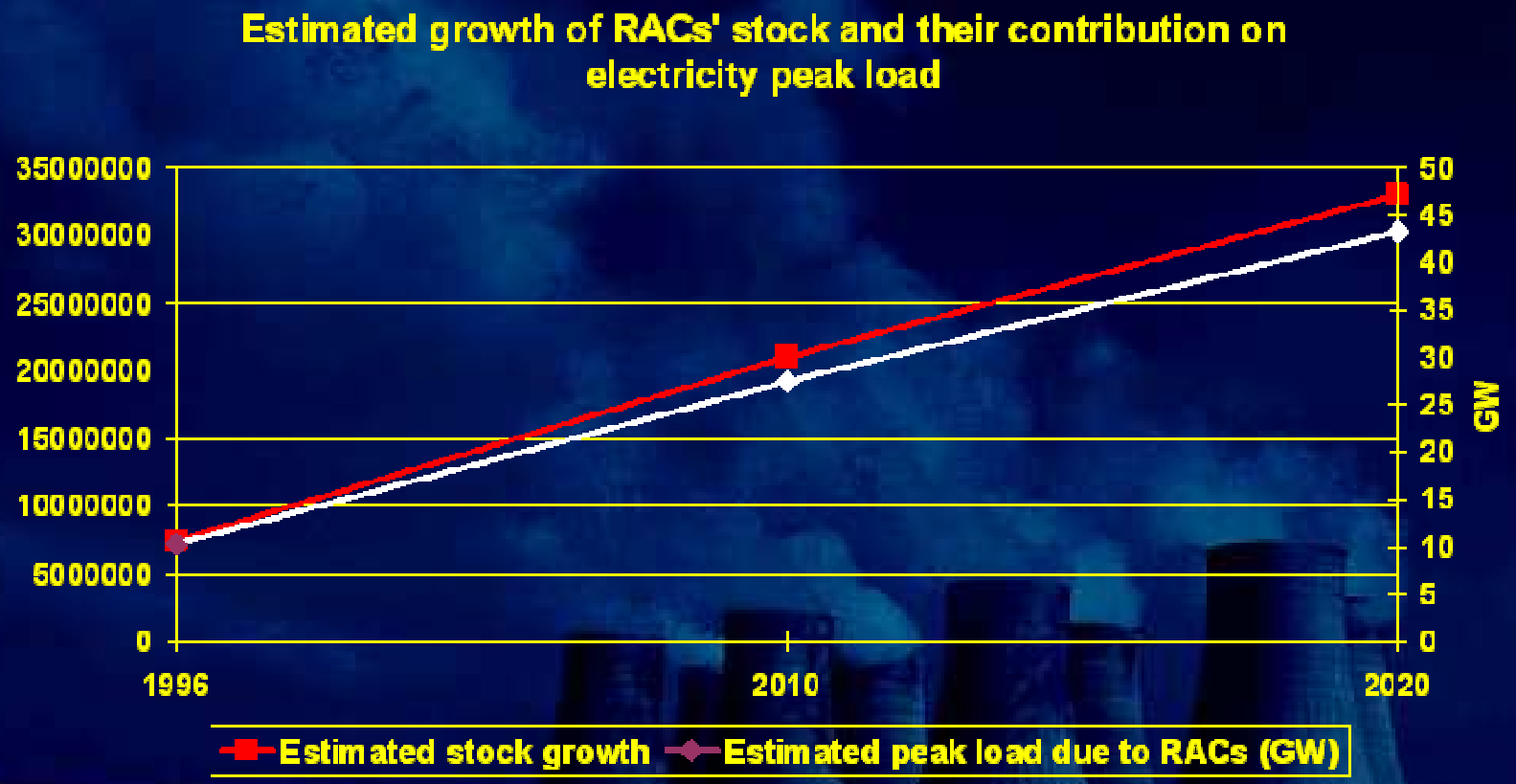
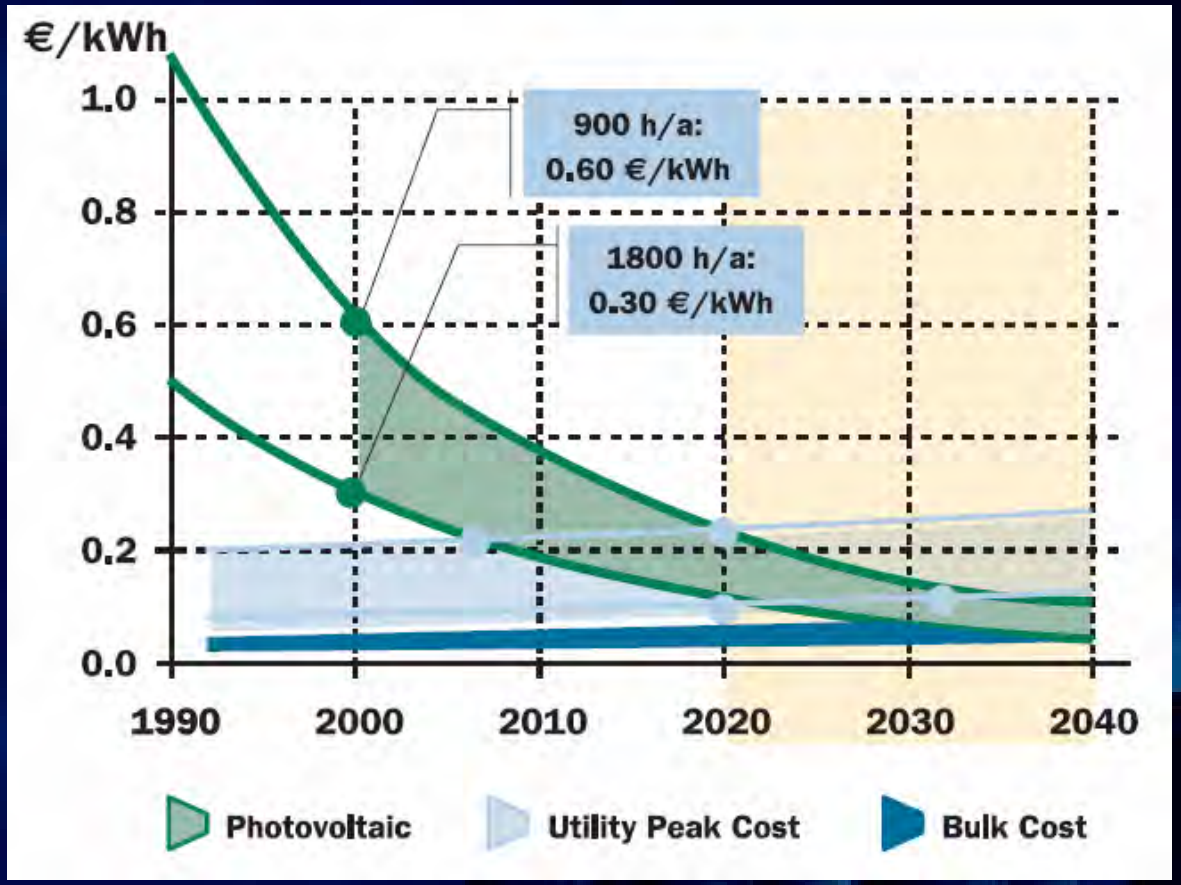
EPBD and thermal insulation, not forgetting the exploding air-conditioning demand



Estimated growth of Room Air Conditioning in the EU *(EERAC study)*

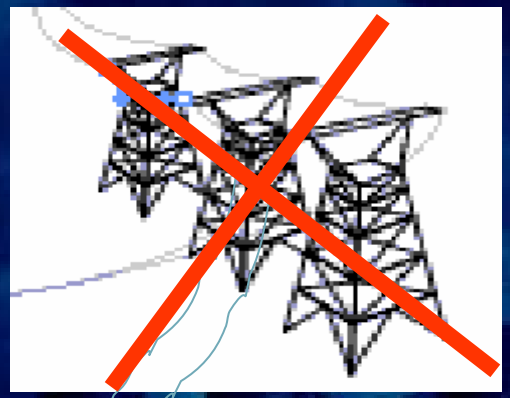
EPBD and thermal insulation, not forgetting the exploding electricity demand

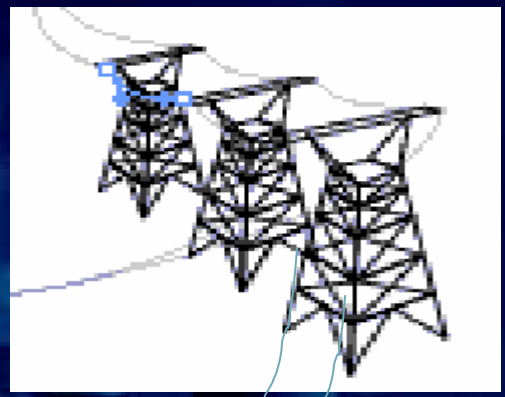


According to the Green Paper on energy efficiency (June 2005):

The production of an electric kWh costs on average 0,12 €
The production of an electric kWh peak load costs between 0,15 and 0,25 €
The cost of saving this same kWh is only between 0,026 and 0,039 €

EPBD and thermal insulation, not forgetting the exploding electricity demand





EPBD, thermal insulation and a certain goal

This is the minimum aim that we must set,
in order to be able

to establish and maintain

high living standards
affordable by everyone.